QB

LIGHT INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 97.180

Classification number: Y 69

Registration number: 46736-2014

QB/T 4695-2014

Household and similar pre-filter

家庭和类似用途前置过滤器

Issued on: July 09, 2014 **Implemented on: November 01, 2014**

Issued by: Ministry of Industry and Information Technology of the People's Republic of China

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed by China Light Industry Association.

This standard shall be under the jurisdiction of the National Standardization Technical Committee of Household Appliances (SAC/TC 46).

The main drafting organizations of this standard: Shenzhen Chengde Industrial Co., Ltd., Zhejiang Qinyuan Water Treatment Technology Co., Ltd., Shanghai Haoze Water Technology Development Co., Ltd., Hangzhou Shuixiang Environmental Technology Co., Ltd., Shenzhen Jialeshi Water Technology Co., Ltd, Zhuhai Gree Electric Appliance Inc., 3M (China) Co., Ltd., Dongli Technology (Shanghai) Co., Ltd., China Household Electrical Appliances Research Institute, Wuxi Water Purification Industry Associations.

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Household and similar pre-filter

1 Scope

This standard specifies the terms and definitions, product classifications and model designations, requirements, test methods, inspection rules, marking, packaging, transport and storage of household and similar filtration equipment for the removal of particulate matter in tap water.

This standard applies to the pre-filter which uses the municipal tap water or other centralized supplied water as raw water AND the filter or lamination as the main filtration means, used for household and similar applications.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this Standard.

GB/T 191-2008 Packaging – Pictorial marking for handling of goods (ISO 780:1997, MOD)

GB/T 1019 General requirements for the package of household and similar electrical appliances

GB/T 2828.1 Sampling procedures for inspection by attributes - Part 1: Sampling scheme indexed by acceptance quality limit (AQL) for lot-by-lot inspection (GB/T 2828.1-2012, ISO 2859-1:1999, IDT)

GB/T 2829 Sampling procedures and tables for periodic inspection by attributes (Apply to inspection of stability for productive process)

GB/T 4706.1 Safety of household and similar electrical appliances - Part 1: General requirements (GB 4706.1-2005, IEC 60335-1:2001, IDT)

GB 5749 Sanitary standard for drinking water

GB/T 10125 Corrosion tests in artificial atmospheres - Salt spray test (GB/T 10125-2012, ISO 9227:2006, IDT)

GB/T 17219 Standard for safety evaluation of equipment and protective materials

It refers to the efficiency of the pre-filter to be able to retain the particles of the nominal pore size of the manufacturer.

Note: Unit is %.

3.6

Pressure drop

It refers to, when the pre-filter works, the difference between the water inlet pressure and the purified water outlet pressure.

Note: The unit is kilopascal (kPa).

3.7

Rated water flow

It refers to, under the working pressure of 0.2 MPa, the amount of water produced per unit time.

Note 1: The unit is liters per hour (L/h).

Note 2: During the operation, it may conduct such flux recovery operation as flush and backflush in accordance with the methods as specified by the manufacturer.

3.8

Rated production capacity

It refers to the total amount of water filtered when the flushing cannot make the flux recover or cannot make it reach to the expected filtration accuracy after the filter element is used for a certain period.

Note: The unit is cubic meters (m^3).

4 Product classification and model designation

4.1 Product classification

Depending on the specifications, the pre-filters are divided into the following categories:

- Filter element type:

5.1.2 Environmental conditions

a) Temperature: 4 °C ~ 40 °C;

b) Avoid direct sunlight;

c) Relative humidity: not more than 90% (at 25 °C).

5.2 Appearance

Appearance shall be clean and neat and free from rust or burr.

5.3 Structure

5.3.1 CONDUCT static pressure test, AND the pre-filter shall have no leakage or permanent deformation.

5.3.2 In the water purification or backflush state, CONDUCT the cycle pressure test, AND the pre-filter shall have no leakage or permanent deformation.

5.3.3 CONDUCT the burst pressure test, AND the pre-filter shall have no leakage or permanent deformation. The pre-filter equipped with plastic barrel shall be able to withstand the static pressure 4 times of the maximum working pressure OR 2.76 MPa (whichever is larger).

5.4 Use performance

5.4.1 Purified water flow

The actual purified water flow shall not be less than the rated water flow.

5.4. 2 Retention rate

Retention rate shall not be less than 90%.

5.4.3 Pressure drop

At the rated working flow, the working pressure drop of the totally new pre-filter shall not exceed 50 kPa.

The water flow shall not be less than the provisions in Table 1.

Table 1 Corresponding relationship between water flow and nominal size

Nominal size	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
Flow rate Q/(m^3/h)	1.27	2.27	3.6	5.8	9.1	14	24	36	53
Note: The flow velocity of the flow rate corresponding to the above data is about 2 m/s.									

SET the initial pressure of the pre-filter during cycle pressure test at 150 kPa, AND the final pressure at 1.5 times of the maximum working pressure OR 1.04 MPa (whichever is larger); the cycle number is 100000 AND the frequency is (15 ± 2) times/min.

INSTALL the pre-filter in the device as shown in Figure 1; the pressure increase time shall be greater than 1 s; before starting another cycle, it shall decrease the pressure to below 150 kPa.

6.3.3 Burst pressure test

INSTALL the pre-filter in the device as shown in Figure 1; MAKE the pressure increase not less than 0.69 MPa/s AND reach to the required pressure within 70 s; MAINTAIN for 5 s; RELEASE pressure.

6.4 Use performance

6.4.1 Water flow

Under the test conditions as required in 6.1, in accordance with the use instructions, INSTALL the pre-filter; after working normally for 5 min, from the water outlet sampling port, TAKE the purified water for (60 ± 1) s; WEIGH it and CALCULATE the water flow, in the unit of L/h.

6.4.2 Retention rate

6.4.2.1 Preparation for test

The standard particle and amount are shown in Table 3. The selected particle DN50 size shall correspond to the declared retention particle size. Particle size is in normal distribution, AND the difference between the maximum particle size and the minimum particle size shall be less than 30 μm.

Table 3 Particle size and amount

Nominal size	≤DN25	DN25	≥DN25
Amount required / g	1	2	3

The test device is as shown in Figure 2.

LET the test water pass through the pre-filter (filtration accuracy of 5 μm) AND flow into the water tank; in the water tank, ADD the particles to be tested; STIR it uniformly for at least 10 min.

8 Marking, packaging, transportation and storage

8.1 Marking

8.1.1 The pre-filter shall be provided with a nameplate at a prominent position. On the nameplate it shall at least be clearly marked with the following information:

a) Product name and specification model;

b) Manufacturer name;

c) Product number or manufacture date;

d) Water flow, rated production capacity, working pressure;

e) Sanitary administrative license approved number, reference standard number.

8.1.2 As for the pre-filter for which the water flow direction may be confused, it shall be provided with water inlet and outlet direction marking.

8.2 Packaging

8.2.1 The packing and storage pictorial markings shall comply with GB/T 191.

8.2.2 The packaging of the filter element shall adopt necessary sealing measures AND comply with the provisions of GB/T 1019.

8.2.3 The outer surface of the product packaging shall be clearly marked at least the following:

a) Product Name, specification model;

b) Manufacturer's name and address:

c) Gross weight:

d) Package dimensions (length × width × height).

8.2.4 The following technical documents shall be available in the package:

a) Packaging list (can be attached to the instructions):

b) Instructions for use:

c) Product certificate, warranty card.